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SEQUENCE LISTING

<110> HATTORI, NORIAKI
MURAKAMI, SEIJI

<120> LUCIFERASE AND A METHOD FOR DETECTING INTRACELLULAR ATP USING THE SAME

<130> 193582US-3524-7126-0 PCT

<140> 09/581241

<141> 2000-06-26

<150> JP97/361022

<151> 1997-12-26

<160> 6

<170> PatentIn version 3.1

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<212> DNA

<213> ARTIFICIAL SEQUENCE

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<211> 1644

<212> DNA

<213> Luciola lateralis

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<221> CDS

<222> (1)..(1644)

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ttt tac cct att gaa gag gga tct gct gga gca caa ttg cgc aag tat				96
Phe Tyr Pro Ile Glu Glu Gly Ser Ala Gly Ala Gln Leu Arg Lys Tyr				
20		25	30	
atg gat cga tat gca aaa ctt gga gca att gct ttt act aac gca ctt				144
Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala Leu				
35		40	45	
acc ggt gtc gat tat acg tac gcc gaa tac tta gaa aaa tca tgc tgt				192
Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys				
50		55	60	
cta gga gag gct tta aag aat tat ggt ttg gtt gtt gat gga aga att				240
Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg Ile				
65		70	75	80
gcg tta tgc agt gaa aac tgt gaa gaa ttc ttt att cct gta tta gcc				288
Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu Ala				
85		90	95	
ggg tta ttt ata ggt gtc ggt gtg gct cca act aat gag att tac act				336
Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr				
100		105	110	
cta cgt gaa ttg gtt cac agt tta ggc atc tct aag cca aca att gta				384
Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Ile Val				
115		120	125	
ttt agt tct aaa aaa gga tta gat aaa gtt ata act gta caa aaa acg				432
Phe Ser Ser Lys Lys Gly Leu Asp Lys Val Ile Thr Val Gln Lys Thr				
130		135	140	
gta act gct att aaa acc att gtt ata ttg gac agc aaa gtg gat tat				480
Val Thr Ala Ile Lys Thr Ile Val Ile Leu Asp Ser Lys Val Asp Tyr				
145		150	155	160
aga ggt tat caa tcc atg gac aac ttt att aaa aaa aac act cca caa				528
Arg Gly Tyr Gln Ser Met Asp Asn Phe Ile Lys Lys Asn Thr Pro Gln				
165		170	175	
ggg ttc aaa gga tca agt ttt aaa act gta gaa gtt aac cgc aaa gaa				576
Gly Phe Lys Gly Ser Ser Phe Lys Thr Val Glu Val Asn Arg Lys Glu				
180		185	190	
caa gtt gct ctt ata atg aac tct tcg ggt tca acc ggt ttg cca aaa				624
Gln Val Ala Leu Ile Met Asn Ser Ser Gly Ser Thr Gly Leu Pro Lys				
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ggg gtg caa ctt act cat gaa aat ttg gtc act aga ttt tct cac gct				672
Gly Val Gln Leu Thr His Glu Asn Leu Val Thr Arg Phe Ser His Ala				
210		215	220	
aga gat cca att tat gga aac caa gtt tca cca ggc acg gct att tta				720
Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu				
225		230	235	240

a!
Cont

act gta gta cca ttc cat cat ggt ttt ggt atg ttt act act tta ggc 768
 Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly
 245 250 255

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 Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu
 260 265 270

gag act ttt tta aaa aca ctg caa gat tac aaa tgt tca agc gtt att 864
 Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile
 275 280 285

ctt gta ccg act ttg ttt gca att ctt aat aga agt gaa tta ctc gat 912
 Leu Val Pro Thr Leu Phe Ala Ile Leu Asn Arg Ser Glu Leu Leu Asp
 290 295 300

aaa tat gat tta tca aat tta gtt gaa att gca tct ggc gga gca cct 960
 Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro
 305 310 315 320

tta tct aaa gaa att ggt gaa gct gtt gct aga cgt ttt aat tta ccg 1008
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 325 330 335

ggt gtt cgt caa ggc tat ggt tta aca gaa aca acc tct gca att att 1056
 Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile
 340 345 350

atc aca ccg gaa ggc gat gat aaa cca ggt gct tct ggc aaa gtt gtg 1104
 Ile Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val
 355 360 365

cca tta ttt aaa gca aaa gtt atc gat ctt gat act aaa aaa act ttg 1152
 Pro Leu Phe Lys Ala Lys Val Ile Asp Leu Asp Thr Lys Lys Thr Leu
 370 375 380

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 Gly Pro Asn Arg Arg Gly Glu Val Cys Val Lys Gly Pro Met Leu Met
 385 390 395 400

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 Lys Gly Tyr Val Asp Asn Pro Glu Ala Thr Arg Glu Ile Ile Asp Glu
 405 410 415

gaa ggt tgg ttg cac aca gga gat att ggg tat tac gat gaa gaa aaa 1296
 Glu Gly Trp Leu His Thr Gly Asp Ile Gly Tyr Tyr Asp Glu Glu Lys
 420 425 430

cat ttc ttt atc gtg gat cgt ttg aag tct tta atc aaa tac aaa gga 1344
 His Phe Phe Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly
 435 440 445

tat caa gta cca cct gct gaa tta gaa tct gtt ctt ttg caa cat cca 1392
 Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro
 450 455 460

aat att ttt gat gcc ggc gtt gct ggc gtt cca gat cct ata gct ggt 1440
 Asn Ile Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly 480
 465 470 475

gag ctt ccg gga gct gtt gtt gta ctt aag aaa gga aaa tct atg act 1488
 Glu Leu Pro Gly Ala Val Val Val Leu Lys Lys Gly Lys Ser Met Thr 495
 485 490

gaa aaa gaa gta atg gat tac gtt gct agt caa gtt tca aat gca aaa 1536
 Glu Lys Glu Val Met Asp Tyr Val Ala Ser Gln Val Ser Asn Ala Lys 510
 500 505

cgt ttg cgt ggt ggt gtc cgt ttt gtg gac gaa gta cct aaa ggt ctc 1584
 Arg Leu Arg Gly Gly Val Arg Phe Val Asp Glu Val Pro Lys Gly Leu 525
 515 520

act ggt aaa att gac ggt aaa gca att aga gaa ata ctg aag aaa cca 1632
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 Val Ala Lys Met
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 35 40

Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys 60
 50 55

Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg Ile 80
 65 70 75

Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu Ala 95
 85 90

Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr

100

105

110

Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Ile Val
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Phe Ser Ser Lys Lys Gly Leu Asp Lys Val Ile Thr Val Gln Lys Thr
130 135 140

Val Thr Ala Ile Lys Thr Ile Val Ile Leu Asp Ser Lys Val Asp Tyr
145 150 155 160

Arg Gly Tyr Gln Ser Met Asp Asn Phe Ile Lys Lys Asn Thr Pro Gln
165 170 175

Gly Phe Lys Gly Ser Ser Phe Lys Thr Val Glu Val Asn Arg Lys Glu
180 185 190

Gln Val Ala Leu Ile Met Asn Ser Ser Gly Ser Thr Gly Leu Pro Lys
195 200 205

Gly Val Gln Leu Thr His Glu Asn Leu Val Thr Arg Phe Ser His Ala
210 215 220

Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu
225 230 235 240

Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly
245 250 255

Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu
260 265 270

Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile
275 280 285

Leu Val Pro Thr Leu Phe Ala Ile Leu Asn Arg Ser Glu Leu Leu Asp
290 295 300

Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro
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Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro
325 330 335

Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile
340 345 350

Ile Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val
355 360 365

Pro Leu Phe Lys Ala Lys Val Ile Asp Leu Asp Thr Lys Lys Thr Leu
370 375 380

Gly Pro Asn Arg Arg Gly Glu Val Cys Val Lys Gly Pro Met Leu Met
385 390 395 400

Lys Gly Tyr Val Asp Asn Pro Glu Ala Thr Arg Glu Ile Ile Asp Glu
405 410 415

Glu Gly Trp Leu His Thr Gly Asp Ile Gly Tyr Tyr Asp Glu Glu Lys
420 425 430

His Phe Phe Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly
435 440 445

Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro
450 455 460

Asn Ile Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly
465 470 475 480

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485 490 495

Glu Lys Glu Val Met Asp Tyr Val Ala Ser Gln Val Ser Asn Ala Lys
500 505 510

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Val Ala Lys Met
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Phe Tyr Pro Ile Glu Glu Gly Ser Ala Gly Ala Gln Leu Arg Lys Tyr	
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atg gat cga tat gca aaa ctt gga gca att gct ttt act aac gca ctt	144
Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala Leu	
35 40 45	
acc ggt gtc gat tat acg tac gcc gaa tac tta gaa aaa tca tgc tgt	192
Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys	
50 55 60	
cta gga gag gct tta aag aat tat ggt ttg gtt gtt gat gga aga att	240
Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg Ile	
65 70 75 80	
gcg tta tgc agt gaa aac tgt gaa gaa ttc ttt att cct gta tta gcc	288
Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu Ala	
85 90 95	
ggg tta ttt ata ggt gtc ggt gtg gct cca act aat gag att tac act	336
Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr	
100 105 110	
cta cgt gaa ttg gtt cac agt tta ggc atc tct aag cca aca att gta	384
Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Ile Val	
115 120 125	
ttt agt tct aaa aaa gga tta gat aaa gtt ata act gta caa aaa acg	432
Phe Ser Ser Lys Lys Gly Leu Asp Lys Val Ile Thr Val Gln Lys Thr	
130 135 140	
gta act gct att aaa acc att gtt ata ttg gac agc aaa gtg gat tat	480
Val Thr Ala Ile Lys Thr Ile Val Ile Leu Asp Ser Lys Val Asp Tyr	
145 150 155 160	
aga ggt tat caa tcc atg gac aac ttt att aaa aaa aac act cca caa	528
Arg Gly Tyr Gln Ser Met Asp Asn Phe Ile Lys Lys Asn Thr Pro Gln	
165 170 175	

ggt ttc aaa gga tca agt ttt aaa act gta gaa gtt aac cgc aaa gaa 576
 Gly Phe Lys Gly Ser Ser Phe Lys Thr Val Glu Val Asn Arg Lys Glu
 180 185 190

caa gtt gct ctt ata atg aac tct tcg ggt tca acc ggt ttg cca aaa 624
 Gln Val Ala Leu Ile Met Asn Ser Ser Gly Ser Thr Gly Leu Pro Lys
 195 200 205

ggt gtg caa ctt act cat gaa aat atc gtc act aga ttt tct cac gct 672
 Gly Val Gln Leu Thr His Glu Asn Ile Val Thr Arg Phe Ser His Ala
 210 215 220

aga gat cca att tat gga aac caa gtt tca cca ggc acg gct att tta 720
 Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu
 225 230 235 240

act gta gta cca ttc cat cat ggt ttt ggt atg ttt act act tta ggc 768
 Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly
 245 250 255

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 Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu
 260 265 270

gag act ttt tta aaa aca ctg caa gat tac aaa tgt tca agc gtt att 864
 Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile
 275 280 285

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 290 295 300

aaa tat gat tta tca aat tta gtt gaa att gca tct ggc gga gca cct 960
 Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro
 305 310 315 320

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 325 330 335

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 340 345 350

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 405 410 415

gaa ggt tgg ttg cac aca gga gat att ggg tat tac gat gaa gaa aaa 1296
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 420 425 430

cat ttc ttt atc gtg gat cgt ttg aag tct tta atc aaa tac aaa gga 1344
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 435 440 445

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 Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro
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 465 470 475 480

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 485 490 495

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 500 505 510

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 515 520 525

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gtt gct aag atg
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 35 40 45

Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys
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Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg Ile
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Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu Ala
85 90 95

Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr
100 105 110

Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Ile Val
115 120 125

Phe Ser Ser Lys Lys Gly Leu Asp Lys Val Ile Thr Val Gln Lys Thr
130 135 140

Val Thr Ala Ile Lys Thr Ile Val Ile Leu Asp Ser Lys Val Asp Tyr
145 150 155 160

Arg Gly Tyr Gln Ser Met Asp Asn Phe Ile Lys Lys Asn Thr Pro Gln
165 170 175

Gly Phe Lys Gly Ser Ser Phe Lys Thr Val Glu Val Asn Arg Lys Glu
180 185 190

Gln Val Ala Leu Ile Met Asn Ser Ser Gly Ser Thr Gly Leu Pro Lys
195 200 205

Gly Val Gln Leu Thr His Glu Asn Ile Val Thr Arg Phe Ser His Ala
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Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu
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Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly
245 250 255

Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu
260 265 270

Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile
275 280 285

Leu Val Pro Thr Leu Phe Ala Ile Leu Asn Arg Ser Glu Leu Leu Asp
290 295 300

Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro
305 310 315 320

Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro
325 330 335

Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile
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Ile Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val
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Pro Leu Phe Lys Ala Lys Val Ile Asp Leu Asp Thr Lys Lys Thr Leu
370 375 380

Gly Pro Asn Arg Arg Gly Glu Val Cys Val Lys Gly Pro Met Leu Met
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Lys Gly Tyr Val Asp Asn Pro Glu Ala Thr Arg Glu Ile Ile Asp Glu
405 410 415

Glu Gly Trp Leu His Thr Gly Asp Ile Gly Tyr Tyr Asp Glu Glu Lys
420 425 430

His Phe Phe Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly
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Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro
450 455 460

Asn Ile Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly
465 470 475 480

Glu Leu Pro Gly Ala Val Val Val Leu Lys Lys Gly Lys Ser Met Thr
485 490 495

a!
Cont

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Arg Leu Arg Gly Gly Val Arg Phe Val Asp Glu Val Pro Lys Gly Leu
515 520 525

Thr Gly Lys Ile Asp Gly Lys Ala Ile Arg Glu Ile Leu Lys Lys Pro
530 535 540

Val Ala Lys Met
545
